Amendments to the Claims

Please amend claims 1-14. Please add new claim 15. The currently pending claims after

amendment are listed below.

_A2_

1   1.   (Currently Amended)   A method for externally managing ~~a~~ data within an asynchronous

2   pipeline, wherein said asynchronous pipeline includes a <u>plurality of pipeline stages, and a</u> data

3   path and a control path <u>traversing said plurality of pipeline stages in unison</u>, said method

4   comprising:

5   assigning a <u>respective</u> data tag value to ~~said~~ <u>each of a plurality of</u> data <u>sets, each said data</u>

6   <u>set for input to said asynchronous pipeline in a respective input interval</u>;

7   sending <u>each</u> said <u>respective</u> data tag value into said control path when said data ~~value~~ <u>set</u>

8   <u>to which the respective data tag value is assigned</u> is sent into said data path such that said

9   <u>respective</u> data tag value passes through <u>each successive stage of said plurality of stages of</u> said

10   asynchronous pipeline in ~~parallel~~ <u>unison</u> with said data <u>set to which the respective data tag value</u>

11   <u>is assigned</u>; and

12   comparing <u>each</u> said data tag value with a <u>respective</u> control tag value <u>associated</u>

13   <u>with a given stage of said asynchronous pipeline</u>; and

14   in response to ~~said~~ <u>a</u> data tag value matching ~~said~~ <u>a respective</u> control tag value,

15   permitting said <u>matching data tag value and the</u> data <u>set to which said matching data tag</u>

16   <u>value is assigned</u> to pass <u>in unison</u> to a next stage within said asynchronous pipeline.

1   2.   (Currently Amended)   The method of claim 1, wherein said step of assigning a

2   <u>respective</u> data tag value comprises associating ~~an~~ <u>a respective</u> encoded binary sequence

3   with <u>each</u> said data <u>set</u>.

1   3.   (Currently Amended)   The method of claim 2, wherein said comparing step further

2   comprises decoding said encoded binary ~~sequence~~ <u>sequences</u> to identify said data tag ~~value~~

3   <u>values</u>.

1   4.   (Currently Amended)   The method of claim 1, further comprising delivering <u>each</u>

2   said data tag value to a processor that is in communicative contact with said given stage.

1   5.   (Currently Amended)   The method of claim 4, further comprising:

2   assigning a <u>respective</u> control tag value with respect to <u>each</u> said data tag value; and

3   delivering said control tag ~~value~~ <u>values</u> from said processor to said given stage.

1   6.   (Currently Amended)   The method of claim 4, wherein said given stage includes a

2   logic function for processing said data <u>sets,</u> said method further comprising:

3   determining whether or not <u>each</u> said <u>respective</u> control tag value matches <u>each</u> said

4   data tag value; and

5   in response to determining that ~~said~~ <u>a</u> control tag value matches ~~said~~ <u>a</u> data tag value,

6   delivering a control instruction from said processor to said logic function.

1   7.   (Currently Amended)   The method of claim 1, wherein said assigning step further

2   comprises:

3   receiving said data <u>sets</u> at the front-end of said asynchronous pipeline; and

4   associating said data tag ~~value~~ <u>values</u> with said data <u>sets</u> within a memory device.

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8.   (Currently Amended)   A system for externally managing data within an asynchronous pipeline, wherein said asynchronous pipeline includes a <u>plurality of pipeline stages, and a</u> data path and a control path <u>traversing said plurality of pipeline stages in unison</u>, said system comprising:

processing means for assigning a <u>respective</u> data tag value to ~~said~~ <u>each of a plurality of</u> data <u>sets, each said data set for input to said asynchronous pipeline in a respective input interval</u>;

processing means for sending <u>each</u> said <u>respective</u> data tag value into said control path when said data <u>set to which the respective data tag value is assigned</u> is sent into said data path such that said <u>respective</u> data tag value passes through <u>each successive stage of said plurality of stages of</u> said asynchronous pipeline in ~~parallel~~ <u>unison</u> with said data <u>set to which the respective data tag value is assigned</u>; and

logic means for comparing <u>each</u> said data tag value with a <u>respective</u> control tag value <u>associated with a given stage of said asynchronous pipeline</u>, and in response to ~~said~~ <u>a</u> data tag value matching ~~said~~ <u>a respective</u> control tag value, permitting said <u>matching data tag value and the</u> data <u>set to which said matching data tag value is assigned</u> to pass <u>in unison</u> to the next stage within said asynchronous pipeline.

9.   (Currently Amended)   The system of claim 8, wherein said processing means for assigning a <u>respective</u> data tag value comprises processing means for associating ~~an~~ <u>a respective</u> encoded binary sequence with <u>each</u> said data <u>set</u>.

10.   (Currently Amended)   The system of claim 9, further comprising logic means for decoding said encoded binary ~~sequence~~ <u>sequences</u> to identify said data tag ~~value~~ <u>values</u>.

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1   11.   (Currently Amended)   The system of claim 8, further comprising processing means

2   for delivering each said data tag value to a processor that is in communicative contact with

3   said given stage.

1   12.   (Currently Amended)   The system of claim 11, further comprising:

2   processing means for assigning a respective control tag value with respect to each

3   said data tag value; and

4   processing means for delivering said control tag ~~value~~ values from said processor to

5   said given stage.

1   13.   (Currently Amended)   The system of claim 11, wherein said given stage includes a

2   logic function for processing said data sets, said system further comprising:

3   logic means for determining whether or not each said respective control tag value

4   matches each said data tag value; and

5   processing means responsive to ~~said~~ a control tag value matching ~~said~~ a data tag

6   value for delivering a control instruction from said processor to said logic function.

1   14.   (Currently Amended)   The system of claim 8, wherein said processing means for

2   assigning a data tag value to said data further comprises:

3   processing means for receiving said data sets at the front-end of said asynchronous

4   pipeline; and

5   processing means for associating said data tag ~~value~~ values with said data sets within

6   a memory device.

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15. (New) An asynchronous pipeline apparatus for a digital data processing system,

comprising:

plurality of ordered stages traversed in parallel by a data path and a control path,

said data path transmitting data sets through successive said ordered stages of said pipeline,

each data set entering said pipeline in a respective input interval, said control path

transmitting data tags through successive said ordered stages of said pipeline, each data tag

corresponding to a respective data set, each data tag being transmitted through each

successive said ordered stage of said pipeline in unison with its corresponding data set; and

stage advance control logic which controls the advancing of each said data set and

its corresponding data tag through successive said ordered stages of said asynchronous

pipeline, said stage advance control logic allowing each data set and its corresponding data

tag to advance from a current stage to a successor stage upon satisfaction of a respective

logical stage transition condition associated with each stage transition, wherein for at least

some stage transitions, said logical stage transition condition includes the condition that the

data tag at the current stage matches a control tag value associated with the stage transition.